

**CLAIMS**

What is claimed is:

- 1     1.     A medical device comprising:  
2                 a substrate having openings, and  
3                 a fibrous coating wherein at least one fiber is threaded through the opening in  
4                 said substrate.
- 1     2.     The device of claim 1, wherein the fiber comprises at least one nanofiber.
- 1     3.     The device of claim 1, wherein the fibrous coating is substantially mechanically  
2                 attached to the substrate.
- 1     4.     The device of claim 1, wherein the substrate is selected from the group consisting of  
2                 a stent and a surgical mesh.
- 1     5.     The device of claim 1, wherein the fibrous coating has at least one polymeric  
2                 component selected from the group consisting of polycaprolactone, polylactic acid,  
3                 polyglycolic acid, polydioxanone, polyanhydride, trimethylene carbonate, poly(beta-  
4                 hydroxybutyrate), poly(g-ethylglutamate), poly(DTH iminocarbonate),  
5                 poly(bisphenol A iminocarbonate), poly (ortho ester), polycyanoacrylate,  
6                 polyphosphazene, nylons, polyesters, polyethylene terephthalate, silicon-containing  
7                 polymers, elastomeric silicone polymers, polypropylene, polyolefins, polyolefin  
8                 copolymers, elastomeric polyolefins, modified polysaccharides, cellulose, chitin,  
9                 dextran, modified proteins, fibrin, casein, an adhesive polymer, collagen, and  
10                 fibrinogen.
- 1     6.     The device of claim 1, wherein the fibrous coating comprises a nanofibrous sheet.
- 1     7.     The device of claim 6, wherein the nanofibrous sheet comprises polypropylene.

- 1 8. The device of claim 1, wherein the fibrous coating is attached to the substrate by at  
2 least one melted nanofiber.
- 1 9. The device of claim 1, wherein the fibrous coating is attached to the substrate by at  
2 least one nanofiber that has melted and mechanically attached to at least another  
3 nanofiber, or the substrate.
- 1 10. The device of claim 1, wherein the fibrous coating has been mechanically attached to  
2 the substrate by a heating method.
- 1 11. The device of claim 10, wherein the heating method is selected from the group  
2 consisting of heat sealing, spot heating with a pattern of hot wires, and spot heating  
3 with a laser.
- 1 12. A process comprising the step of using the device of claim 1 in a medical procedure  
2 comprising implantation into a living organism.
- 1 13. A method for attaching a fibrous coating to a substrate comprising the step of:  
2 pushing at least a portion of the fibrous coating through at least one hole in  
3 the substrate.
- 1 14. The method of claim 13 for attaching a fibrous coating to a substrate further  
2 comprising the steps of:  
3 adding at least one nanofiber to a fluid; and  
4 passing the fluid through at least one hole in the substrate so that at least a  
5 portion of a nanofiber also passes or pushes through the at least one hole in the  
6 substrate.
- 1 15. The method of claim 13 for attaching a fibrous coating to a substrate, wherein the  
2 pushing step further comprises:

3                   using a fluid jet to push at least a portion of the fibrous coating through the at  
4                   least one hole in the substrate.

1    16.   The method of claim 13, wherein the fibrous coating includes polypropylene fibers.

1    17.   The method of claim 13, wherein the fibrous coating includes polypropylene  
2           nanofibers.

1    18.   The method of claim 13, wherein the fibrous coating is formed by electrospinning at  
2           least one fiber onto a surface of the substrate.

1    19.   The method of claim 13, wherein the fibrous coating is formed using a nanofibers by  
2           gas jet method to manufacture at least one fiber directly onto the substrate.

1    20.   The method of claim 13, wherein fibrous coating is formed using an electrospinnable  
2           solution having a temperature sufficient to dissolve the polymer solution.

1    21.   The method of claim 20, wherein the polymer solution comprises polypropylene,  
2           polyolefins, or polyolefin copolymers.

1    22.   A method for attaching a fibrous coating to a substrate comprising the steps:  
2                   providing a substrate;  
3                   coating a first side of the substrate with a fibrous coating; and  
4           forcing at least one fiber through an opening in the substrate.

1    23.   The method of claim 22, wherein the step of forcing at least one fiber through an  
2           opening in a substrate is performed by:  
3                   adding at least one fiber to a fluid to thereby form a fiber-fluid solution;  
4           and

5                    passing the fiber-fluid solution through at least one hole in an device wall  
6                    so that the fiber is threaded by the fluid into the at least one hole in the device wall.

1    24.    The method of claim 22, wherein the device is a stent or substrate and the substrate  
2           is a stent wall or a surgical-mesh wall.

1    25.    The method of claim 22 for attaching a fibrous coating to a substrate further  
2           comprising the step:

3                   pulling at least a portion of the fibrous coating through at least one hole in the  
4           substrate.

1    26.    The method of claim 22, wherein the step of pulling at least a portion of the fibrous  
2           coating through the at least one hole in the substrate is performed by pulling a  
3           substantially needle-like object through at least one hole in the substrate, wherein a  
4           portion of the fibrous coating is pulled through the at least one hole by the needle-  
5           like object.

1    27.    The method of claim 22, wherein the step of pulling at least a portion of the fibrous  
2           coating through the at least one hole in the substrate is achieved by performing the  
3           additional steps:

4                   inserting a portion of at least one substantially needle-like object through  
5           the at least one hole;

6                   attaching at least one nanofiber to the substantially needle-like object; and

7                   withdrawing the substantially needle-like object from the at least one hole  
8           so that the at least one nanofiber is pulled through the at least one hole.

1    28.    The method of claim 22 for attaching a fibrous coating to a substrate further  
2           comprising the steps:

3                   applying a positively-charged fibrous coating to a first side of the substrate;  
4           and

5                   applying a negatively-charged fibrous coating to a second side of the  
6                   substrate.

1     29.     The method of claim 22, further including

2                   coating a second side of the substrate with at least a second fiber;

3                   wherein the fibrous coating or the at least a second fiber is contact  
4                   adhesive, and

5                   wherein the fibrous coating and the at least a second fiber contact each  
6                   other so that at least a portion of the fibrous coating and the at least a second fiber  
7                   forms an adherent joint.

1     30.     The method of claim 22 for attaching a fibrous coating to a substrate further  
2                   comprising the step:

3                   heat treating a fibrous coating, wherein the heat treatment causes at least  
4                   one nanofiber to melt and form an adherent joint with at least, another nanofiber,  
5                   or the substrate.

1     31.     The method of claim 30, wherein the heat treating step further comprises using a  
2                   laser, a heating element, or a combination thereof.

1     32.     A means for mechanically attaching a fibrous coating to a substrate.

1     33.     The means of claim 32, wherein the fibrous coating comprises at least one nanofiber

1     34.     The means of claim 33, wherein the fibrous coating comprises a free-standing  
2                   fibrous polymer sheet